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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included. (AG)

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TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

FISH AND GAME WARDEN (Gov. Ser.) 0-94.94

B-540 S-263

TM 001 909

U. S. Employment Service in
Cooperation with
North Carolina State Employment Service

June 1963

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

FISH AND GAME WARDEN (Gov. Ser.) 0-94.94

B-540

Summary

The General Aptitude Test Battery, B-1002B, was administered to a final sample of 80 men employed as Fish and Game Wardens 0-94.94 by the State of North Carolina. The criterion consisted of supervisory ratings. On the basis of mean scores, standard deviations, correlations with the criterion, job analysis data, and their combined selective efficiency, Aptitudes V-Verbal Aptitude, S-Spatial Aptitude, Q-Clerical Aptitude, and K-Motor Coordination were selected for inclusion in the final test norms.

GATB Norms for Fish and Game Warden 0-94.94, B-540

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
V	CB-1-J	90	V	Part 4	90
S	CB-1-F CB-1-H	90	S	Part 3	85
Q	CB-1-B	85	Q	Part 1	85
T	CB-1-G CB-1-K	65	K	Part 8	70

Effectiveness of Norms

The data in Table IV indicate that only 66 percent of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the above norms, 82 percent would have been good workers. 34 percent of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the above norms, only 18 percent would have been poor workers.

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Fish and Game Warden 0-94.94.

II. Sample

The General Aptitude Test Battery, B-1002B, was administered between September 5 and 21, 1962 to a final sample of 80 men employed as Fish and Game Wardens 0-94.94 (designated on-the-job as Wildlife Protector I) by the North Carolina Wildlife Commission in the nine administrative areas of the State. The area locations, dates of testing, and number of individuals in the final sample tested at each location are shown below:

Area		Testing Date	N
1	Edenton	9-6-62	12
2	New Bern	9-5-62	10
3	Wilson	9-7-62	9
4	Elizabethtown	9-21-62	10
5	Chapel Hill	9-11-62	7
6	Salisburg	9-12-62	7
7	Wilkesboro	9-13-62	7
8	Morganton	9-14-62	8
9	Nantahala Village	9-18-62	10
			80

Applicants for employment are screened by oral interview for interest in the work. Those with a high school education and a maximum age of 35 are preferred. An annual academic training period of 3 weeks is used to acquaint prospective applicants with laws and methods used. This group is drawn on as needed to keep about 5 men in trainee status. The trainee accompanies an experienced Fish and Game Warden for 3 to 5 months before being officially assigned to a Wildlife Protector I job vacancy, in which he must serve a 6 month on-the-job probationary period. For this study, the six month probation period was considered the minimum training period for the job; all of the individuals in the final sample are considered experienced.

TABLE I

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

N = 80	M	σ	Range	r
Age (years)	35.2	10.1	22-58	-.193
Education (years)	12.2	1.3	7-16	.199
Experience (months)	88.1	77.2	7-298	-.180

III. Job Description

Job Title: Fish and Game Warden (Gov. Ser.) 0-94.94

Job Summary: Patrols a designated area to protect wildlife and prevent violation of game laws. Investigates reports of violations, apprehends violators, collects evidence, and prosecutes cases before proper authorities.

Work Performed: Patrols an assigned area, which may include woods, fields, mountains, swamps, streams, and large bodies of fresh or salt water, on foot, in a car or pickup truck, or in an outboard motor boat, as appropriate, to observe activities. Checks licenses and watches for indications of game or boating law violations. Issues citations, makes arrests, and collects evidence for court use. Prosecutes cases or assists attorney in preparing case. Investigates reports of law violations, depredation of wildlife, facilities for captivated wildlife, and boating accidents; takes suitable action or recommends action and prepares reports of investigation and results. Disposes of fish, game, and unlawful devices seized. Makes talks on Wildlife Resources Commission activities and explains wildlife and boating laws to interested persons. Recommends areas to be stocked and participates in stocking. Persuades landowners to cultivate wildlife food crops and distributes informational material.

IV. Experimental Battery

All the tests of the GATB, B-100 2B, were administered to the sample group.

V. Criterion

The criterion data collected consisted of two sets of independent ratings made jointly by the supervisor and assistant supervisor of each area (both are first line supervisors) on USES Form SP-21, "Descriptive Rating Scale." A period of at least three weeks elapsed between the first and second ratings, the first rating being made on the day of testing. The rating scale consisted of nine items covering different aspects of job performance, with five alternatives for each item. Weights of one through five, indicating the degree of job proficiency attained, were assigned to the alternatives. A reliability coefficient of .88 was obtained for the criterion. Therefore, the two sets of ratings were combined, resulting in a distribution of final criterion scores of 26-86, with a mean of 59.9 and a standard deviation of 12.3.

VI Qualitative and Quantitative Analyses

A. Qualitative Analysis

On the basis of the job analysis data, the following aptitudes were rated "important" for success in this occupation:

Intelligence (G) - required to learn, interpret, and explain laws, to become familiar with the topography and terrain, and to acquire basic understanding of the pertinent habits and activities of both wildlife and people.

Form Perception (P) - required in observing and recognizing, by size and shape despite natural cover and camouflage, wildlife, persons, and vehicles; and in observing and interpreting details of investigations.

Clerical Perception (Q) - required in preparing reports, legal forms, and records.

On the basis of job analysis data, N-Numerical Aptitude and F-Finger Dexterity were rated "irrelevant" for success in this occupation.

B. Quantitative Analysis:

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N = 80

Aptitudes	M	σ	r
G-Intelligence	100.0	12.7	.362**
V-Verbal Aptitude	95.8	10.9	.261*
N-Numerical Aptitude	97.8	12.1	.334**
S-Spatial Aptitude	102.3	16.8	.242*
P-Form Perception	95.4	16.4	.334**
Q-Clerical Perception	96.6	13.2	.235*
K-Motor Coordination	97.5	17.7	.258*
F-Finger Dexterity	87.0	23.0	.273*
M-Manual Dexterity	95.9	23.0	.321**

**Significant at the .01 level
*Significant at the .05 level

C. Selection of Test Norms:

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	X				X	X			
Irrelevant			X					X	
Relatively High Mean	X		X	X			X		
Relatively Low Sigma	X	X	X			X			
Significant Correlation with Criterion	X	X	X	X	X	X	X	X	X
Aptitudes to be Considered for Trial Norms	G	V		S	P	Q	K		M

Trial norms consisting of various combinations of Aptitudes G,V,S,P,Q,K & M with appropriate cutting scores were evaluated against the criterion by means of the Phi Coefficient technique. A comparison of the results showed that B-1002 norms consisting of V-90, S-85, Q-85 and K-70 had the best selective efficiency.

VII. Validity of Norms (Concurrent)

The validity of the norms was determined by computing a Phi Coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 34 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV shows the relationship between test norms consisting of Aptitudes V, S, Q and K with critical scores of 90, 85, 85 and 70, respectively, and the dichotomized criterion for Fish and Game Warden 0-94.94. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV

Validity of Test Norms for Fish and Game Warden 0-94.94
(V-90, S-85, Q-85, K-70)

N = 80	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	13	40	53
Poor Workers	18	9	27
Total	31	49	80

Phi Coefficient = .41
X^2 = 13.360
P/2 .0005

The data in the above table indicate a significant relationship between the test norms and the criterion for the sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes V, S, Q and K with minimum scores of 90, 85, 85 and 70, respectively, have been established as B-1002 norms for Fish and Game Warden 0-94.94. The equivalent B-1001 norms consist of V-90, S-90, Q-85 and T-65.

IX. Determination of Occupational Aptitude Pattern

The data for this study did not meet the requirements for incorporating the occupation studied into any of the 35 OAP's included in Section II of the Guide to the Use of the General Aptitude Test Battery, January 1962. The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.